Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20580

In the Matter of	
Amendment of Parts 2 and 15 of the Commission's Rules Regarding Spread Spectrum Transmitters	ET Docket No. 96-8 RM-8435, RM-8608, RM-8609

REPLY COMMENTS OF SPECTRALINK CORPORATION

SpectraLink Corporation ("SpectraLink"), pursuant to the Federal Communications Commission's ("FCC" or "Commission") rules, hereby submits its Reply Comments in the above-captioned rulemaking proceeding.[1/] Specifically, SpectraLink's Reply Comments address those commenters that propose further modification to the Commission's rules governing spread spectrum, frequency-hopping Part 15 devices operating in the 902-928 MHz ("915 MHz") band ("Spread Spectrum Proposal").[2/]

1/ *In the Matter of Amendment of Parts 2 and 15 of the Commission's Rules Regarding Spread Spectrum Transmitters*, Notice of Proposed Rule Making, ET Docket No. 96-8 (rel. February 5, 1996).

2/ *Notice* ¶¶ 26-34.

I. OVERVIEW

SpectraLink is pleased that the majority of parties commenting on the Commission's Spread Spectrum Proposal support SpectraLink's view that allowing spread spectrum devices operating in the 915 MHz band, to use a minimum of 25 hopping frequencies, will increase the possibility of coexistence between Part 15 devices and LMS devices.[3/] As a publicly traded company engaged in the manufacture of Part 15 telephone equipment, SpectraLink maintains a significant and vital interest in the outcome of this proceeding. SpectraLink believes that adoption of this proposal is in the public interest and will increase spectrum efficiency, encourage further innovation, and accommodate future deployment of Part 15 frequency-hopping spread spectrum products.

- In contrast, SpectraLink believes that the alternate proposal of Teletrac License ("Teletrac") -- to restrict spread spectrum devices that hop fewer than 50 hopping frequencies from utilizing more than 50% of their total utilized bandwidth within the three sub-bands designated for multilateration LMS -- is overreaching, wildly restrictive, and does not embrace the principals of spectrum sharing and should be rejected. Nevertheless, in the interest of addressing Teletrac's underlying concern regarding the potential for a malicious operator to set a Part 15 device to purposefully interfere with, rather than avoid, LMS operations, SpectraLink proposes that a simple, easily enforceable obligation be placed upon manufacturers of Part 15 reduced hopping equipment.

- Similarly, SpectraLink believes that the proposal of Ericsson Corporation ("Ericsson") is entirely self-serving, lacks justification, and would not reduce Part 15/LMS interference. Accordingly, SpectraLink urges the Commission to categorically deny Ericsson's proposal.

3/ *See* Comments of ADTRAN, Apple Computer, Digital Wireless Corporation, The Part 15 Coalition, Rockwell International.

- Further, SpectraLink submits that the quadratic power reduction formula proposed by the Wireless Consumer Communications Section of the Telecommunications Industry Association ("TIA") is both unnecessary and overly restrictive for devices hopping between 25 and 50 hops. SpectraLink contends that a linear reduction in power has a direct correlative effect on the reduction of interference to other systems.

- Finally, SpectraLink asserts that the Commission should not exclude devices hopping at less than 50 channels from the presumption of non-interference, particularly since most -- if not all -- devices will be programmed in such a fashion as to hop *entirely outside* LMS spectrum that is being used. Indeed, since the presumption of non-interference applies in only the most limited operating conditions, the operation of a device at 25 versus 50 hops will, as a practical matter, not increase the likelihood of interference to LMS licensees. In any case, regardless of the number of hops, where a Part 15 device does not use the spectrum of a given LMS licensee, it clearly must retain a presumption of non-interference with respect to that licensee.

II. DISCUSSION

A. The Majority of Parties Support the Commission's Spread Spectrum Proposal

Consistent with its view, SpectraLink is pleased to note that, of the parties commenting upon the Commission's Spread Spectrum Proposal, the majority support its adoption. SpectraLink believes that adoption of the Spread Spectrum Proposal would significantly reduce the spectral occupancy of Part 15 devices, particularly when coupled with a corresponding reduction in maximum transmitter power to 500mW for devices using less than 50 hopping frequencies. Under these operating parameters, frequency-hopping Part 15 devices will have greater flexibility to effectively avoid interference with AVM/LMS systems that share spectrum in the same band. Thus, the Commission's Spread Spectrum Proposal benefits both LMS operators and the Part 15 community.

In supporting the Spread Spectrum Proposal, Apple Computer appropriately notes that "[w]ithout this change . . . maximum-bandwidth frequency-hopping devices must transmit in many frequency bands that may already be in use by, or at the least are available for use by, LMS systems."[4/] By hopping at less than 50 hops, however, 915 MHz spread spectrum devices will retain the *flexibility to completely avoid* LMS spectrum in those instances where there are LMS systems in operation. Existing requirements for frequency-hopping systems do not permit these devices, when taking full advantage of permissible occupied bandwidth, to avoid LMS spectrum in the 902-928 MHz band. The application of the Commission's proposed rule changes will, however, permit a frequency-hopping device to avoid, at a minimum, 12.5 MHz of spectrum and will facilitate the peaceful co-existence of Part 15 devices with up to two multi-lateration LMS operators in a single metropolitan area. For this reason, ADTRAN, Apple, Digital Wireless, Metricom, the Part 15 Coalition, and Rockwell International all support the adoption of the Commission's Spread Spectrum Proposal.[5/]

B. Teletrac's Proposal is Overbroad and Should Not be Adopted

Although Teletrac generally supports the Commission's proposal to reduce the minimum number of hopping frequencies to 25, Teletrac expresses concern that a malicious manufacturer or user could design or operate Part 15 spread spectrum devices in such a manner that the hopping

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[4/] Comments of Apple at 3.

[5/] Comments of ADTRAN at 4; Comments of Apple at 3; Comments of Digital Wireless at 2; Comments of Metricom at 6; Comments of the Part 15 Coalition at 6; Comments of Rockwell International at 6-7.

pattern would deliberately interfere with, rather than avoid frequencies in use by, an LMS operator.[6/] Teletrac therefore proposes the adoption of rules that would require Part 15 frequency-hopping devices that use fewer than 50 frequencies to operate with no more than 50% of their total utilized bandwidth within the three sub-bands designated for multilateration LMS.

Teletrac's proposed rules are overbroad, and their adoption would unnecessarily interfere with the responsible operation of Part 15 equipment in, for example, environments where there is no LMS licensee, or where levels of shielding would preclude a Part 15 device from interfering with any LMS licensee. For example, in certain interior environments (*e.g.* buildings, basements, etc.), or in cases where there is no operational LMS licensee, a Part 15 operator may wish to make use of a greater percentage of the shared LMS spectrum. Under Teletrac's proposed rules -- even though a Part 15 operator making use of the LMS spectrum in these instance would cause no interference to LMS operations -- a responsible Part 15 operator would be prohibited from making efficient use of the unused LMS spectrum. SpectraLink submits, therefore, that while Teletrac's concern may be valid, its proposed rules are overbroad, unnecessarily restrictive, and could seriously interfere with the responsible operation of Part 15 devices using less than 50 hops. Accordingly, SpectraLink recommends that the Commission reject Teletrack's proposal.

Understanding Teletrac's concern, SpectraLink proposes that the Commission supplement Section 15.15 its Rules to require that, in cases where Part 15 frequency-hopping spread spectrum equipment is designed to operate between 25 and 50 channels, and when manual channel selection is possible, the sequence and selection of the hopping pattern shall only be performed under the

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[6/] Comments of Teletrac at 5 (stating "[t]his does not mean that the Commission should reject its proposal to allow frequency hopping over a similar number and range of frequencies.")

direction or supervision of the FCC-authorized manufacturer of that equipment, or its assigned agent. Furthermore, the Rules should ensure that the selection of the channels be performed in such a manner so as to encourage avoidance of operational LMS licensees. SpectraLink believes that this proposed rule change will address Teletrac's concern without unnecessarily limiting the ability of responsible Part 15 operators to efficiently and effectively utilize spectrum allocated for their use.

C. Ericsson's Proposal Should Be Rejected

Ericsson is the only Part 15 equipment manufacturer that objects to the Commission's Spread Spectrum Proposal. Ericsson suggests that, to the extent the Commission decides to allow frequency-hopping systems to use only 25 hopping channels, such systems should be precluded from hopping within the LMS spectrum and should further be restricted to a maximum 100 milliwatts of power. Finally, Ericsson proposes that Section 15.249 systems be increased to a maximum of 20 mW per carrier.

Ericsson's proposal does nothing to attempt to reduce interference between Part 15 devices and LMS. Further, Ericsson's suggestion that Section 15.249 systems be allowed to increase their power lacks any justification and appears driven solely by its desire to increase market demand for its systems vis-a-vis other Part 15 devices. Accordingly, Ericsson's proposals lack merit and should be flatly denied.

D. Further Reductions in Output Power Are Overly Restrictive

The Commission initially proposed that frequency-hopping spread spectrum systems operating in the 915 MHz band that use fewer than 50 hopping channels, operate with a maximum

peak transmitter power output of 500 mW. The Commission requested comment on whether a linear reduction in output power is sufficient to reduce the potential for harmful interference.

TIA's comments suggest that the Commission utilize a quadratic formula in order to calculate limits on power output. SpectraLink cannot support this proposal. The use of such a formula is overly restrictive and would preclude use of higher power outputs (*i.e.*, 250-500 mW) that, in themselves, would not cause interference, but are necessary in designing flexible, workable systems. Furthermore, SpectraLink contends that a linear reduction in power has a direct correlative effect on the reduction of interference to other systems. Accordingly, SpectraLink urges the Commission to adopt its proposed rule concerning power output. SpectraLink believes that Part 15 frequency-hopping devices operating in the 915 MHz band using fewer than 50, but more than 25, channels be limited to 500 mW peak transmitter output power. This limitation of power is sufficient to protect other devices from harmful interference and will provide operators with simple, straightforward rules that will facilitate compliance.

E. Frequency Hopping Devices That Do Not Utilize LMS Spectrum Must Retain a Presumption of Non-Interference

Several parties suggest that the Commission should remove otherwise qualified Part 15 devices from the presumption of non-interference when those devices hop over less than 50 channels. Contrary to this view, SpectraLink submits that where a Part 15 device does not use a licensee's LMS spectrum, and where the device otherwise qualifies for the presumption, the Part 15 device should retain its presumption of non-interference with respect to those LMS licensees with whom it is not sharing spectrum -- regardless of the number of the number of hopping channels.

SpectraLink can find no justification for the assertion that the presumption of non-interference should not apply in instances where the device otherwise satisfies the criteria necessary to qualify for the presumption and the Part 15 device does not utilize the spectrum of a given LMS licensee. Further, SpectraLink notes that the presumption of non-interference is so narrowly crafted and restrictive that, in any case, a reduction from 50 to 25 hops will, as a practical matter, not increase the likelihood that a qualifying Part 15 device will interfere with an LMS licensee. Accordingly, SpectraLink urges the Commission not to require that a spread spectrum device must use 50 hopping channels to qualify for the presumption. It is only logical that, where a Part 15 device does not utilize the spectrum of a given LMS licensee, regardless of the number of hopping channels, the device should retain its presumption of non-interference with respect to those LMS licensees with whom the Part 15 device is not sharing spectrum.

III. CONCLUSION

For the foregoing reasons, SpectraLink joins the majority of parties in urging the Commission to adopt the Spread Spectrum Proposal as outlined in the Commission's *Notice* and permit frequency-hopping spread spectrum devices operating in the 915 MHz band to use a minimum of 25 non-contiguous hopping frequencies and operate at a maximum authorized transmitter power of 500 mW while retaining a presumption of non-interference when so qualified.

Respectfully Submitted,

SPECTRALINK CORPORATION, INC.

By: 

Thomas Ohlsson
Product Manager
SpectraLink Corporation, Inc.
1650 - 38th Street, Suite 202E
Boulder, CO 80301
(303) 440-5330

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CERTIFICATE OF SERVICE

I, Cathleen D. Sampson, do hereby certify on this 19th day of July, 1996, that a copy of the foregoing Reply Comments of SpectraLink Corporation, Inc., ET Docket No. 96-8, was served via courier on the party named below, and via first-class mail on the parties named on the attached list.

International Transcription Service
2100 M Street, N.W., Room 140
Washington, D.C. 20036

Cathleen D. Sampson

Roger W. Cain, Engineering Manager
ADTRAN, Inc.
901 Explorer Boulevard
P.O. Box 070020
Huntsville, Alabama 35807

Mary J. Dent, Esq.
for Apple Computer, Inc.
Goldberg, Godles, Wiener & Wright
1229 Nineteenth Street, N.W.
Washington, D.C. 200036

Glendon R. Whitehouse, President
Cushcraft Corporation
48 Perimeter Road
P.O. Box 4680
Manchester, New Hampshire 03108

David C. Jatlow, Esq.
for The Ericsson Corporation
Young & Jatlow
2300 N Street, N.W., Suite 600
Washington, D.C. 20037

Frank Della Corte
GEC Plessey Semiconductors Inc.
1500 Green Hills Road
P.O. Box 660017
Scotts Valley, California 95067-0017

Richard Bleicher, Senior Attorney
Lucent Technologies Inc.
219 Mt. Airy Road
Basking Ridge, New Jersey 07920

Henry M. Rivera, Esq.
Larry S. Solomon, Esq.
for Metricom, Inc.
Ginsburg, Feldman and Bress, Chtd.
1250 Connecticut Avenue, N.W.
Washington, D.C. 20367

Peter Tannenwald, Esq.
Michelle A. McClure, Esq.
for R A M A R Technology Ltd.
Irwin, Campbell & Tannenwald, P.C.
1730 Rhode Island Avenue, N.W., Suite 200
Washington, D.C. 20036-3101

Mark A. Vida
Vice President & General Manager
Tadiran Telecommunications, Inc.
5733 Myerlake Circle
Clearwater, Florida 34620

John S. Logan, Esq.
Michael S. Schooler, Esq.
for Teletrac License, Inc.
Dow, Lohnes & Albertson
1200 New Hampshire Ave., N.W., Suite 800
Washington, D.C. 20037

Christopher D. Imlay, Esq.
for Alliant Techsystems, Inc.
Booth Freret & Imlay, P.C.
1233 20th Street, N.W., Suite 204
Washington, D.C. 20036

James F. Lovette
Principal Scientist, Communications Technologies
Apple Computer, Inc.
One Infinte Loop, MS: 301-4J
Cupertino, California 95014

Richard E. Wiley Esq.
David E. Hilliard, Esq.
for Cylink Corporation
Wiley, Rein & Fielding
1776 K Street, N.W.
Washington, D.C. 20006

Wayne Love, Senior Engineer
Fusion Lighting, Inc.
7524 Standish Place
Rockville, Maryland 20855

Richard H. Edgar, President
International Microwave Power Institute
10210 Leatherleaf Court
Manassas, Virginia 22111-4245

David B. Jeppsen
Director, Federal Public Affairs
Lucent Technologies Inc.
1120 20th Street, N.W., 10th Floor
Washington, D.C. 20036

John H. Bari, President
Microwave Communications Technology, Inc.
2944 Corvin Drive
Santa Clara, California 95051

Linda C. Sadler
Manager, Regulatory Affairs
Rockwell International Corporation
1745 Jefferson Davis Highway, Suite 1200
Arlington, Virginia 22202

Jeffrey Krauss, Consultant
for Tadiran Telecommunications, Inc.
17 West Jefferson Street, #106
Rockville, Maryland 20850

Graham Barnes
Director of Marketing
Western Multiplex Corporation
300 Harbor Boulevard
Belmont, California 94002

Wayne V. Black, Esq.
John Reardon, Esq.
for The American Petroleum Institute
Keller and Heckman, LLP
1001 G Street, N.W., Suite 500-West
Washington, D.C. 20001

Gary Hegland
Regional Microwave Engineer
AT&T Wireless Services
3555 Monte Villa Parkway
Bothell, Washington 98021

P. Stuckey McIntosh, Chairman
Digital Wireless Corporation, Inc.
One Meca Way
Norcross, Georgia 30093

Mohammad kamarehi
Manager, Research & Development
Fusion Systems Corporation
7600 Standish Place
Rockville, Maryland 20855

Henrietta Wright, Esq.
W. Kenneth Ferree, Esq.
for Itron, Inc.
Goldberg, Godles, Wienr & Wright
1229 Nineteenth Street, N.W.
Washington, D.C. 20036

David E. Hilliar, Esq.
for Master Lock Company
1776 K Street, N.W.
Washington, D.C. 20006

Henrietta Wright, Esq.
W. Kenneth Ferree, Esq.
for The Part 15 Coalition
Goldberg, Godles, Wiener & Wright
1229 Nineteenth Street, N.W.
Washington, D.C. 20036

John Favretto, System Engineer
Rural Cellular Corporation
2819 Highway 29 South
Alexandria, Minnesota 56308

Roberta E. Breden, Director
Technical and Regulatory Affairs
Telecommunications Industry Association
2500 Wilson Boulevard
Arlington, Virginia 22201